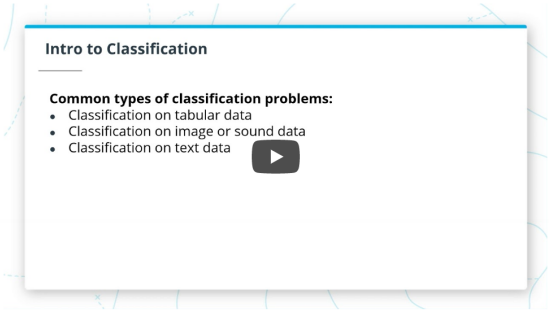
Supervised Learning: Classification

The first type of *supervised learning* that we'll look at is *classification*. Recall that the main distinguishing characteristic of classification is the type of output it produces:

> *In a **classification** problem, the outputs are categorical or discrete.*

Within this broad definition, there are several main approaches, which differ based on how many classes or categories are used, and whether each output can belong to only one class or multiple classes. Let's have a look.



Some of the most common types of classification problems include:

- *Classification on tabular data:* The data is available in the form of rows and columns, potentially originating from a wide variety of data sources.
- *Classification on image or sound data:* The training data consists of images or sounds whose categories are already known.
- *Classification on text data:* The training data consists of texts whose categories are already known.

As we discussed in a previous lesson, machine learning requires numerical data. This means that with images, sound, and text, several steps need to be performed during the preparation phase to transform the data into numerical vectors that can be accepted by the classification algorithms.

Categories of Algorithms

QUESTION 1 OF 2

As we just discussed, at a high level there are three main categories of classification algorithms. Can you match each of them with the correct description?

Submit to check your answer choices!

DESCRIPTION	TYPE OF CLASSIFICATION
The classifier chooses from multiple categories; each output can belong to one or more categories.	Multi-class multi-label classification
The classifier chooses from multiple categories; each output belongs to single category only.	Multi-class single-label classification
The classifier choose from only two categories; each output belongs to one or the other.	Binary classification

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QUESTION 2 OF 2

Given the following confusion matrix:

Class	Positive	Negative
Positive	50	5
Negative	20	100

What is the value for the Precision metric?

- 0.71
- 0.95
- ✓ 0.91
- 0.86

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NEXT